KA‘A‘AWA / HAU‘ULA TOWN HALL MEETING

HAWAI‘I DEPARTMENT OF TRANSPORTATION
HIGHWAYS

5/11/2023

MEETING OBJECTIVES

1. Update the Community on:
    - Immediate Short-Term Projects
    - Proposed Mid-Term Shoreline Erosion Mitigation Projects
        - KKPH
        - KAAAWA
    - Non-Dredging Beach Replenishment Pilot Projects
2. Community Input
    - Solicit Pre-Assessment Comment on the KKPH Environmental Assessment (EA)
    - NHPA Section 106 Consultation for Kaʻaʻawa Elementary School
    - NHPA Section 106 Consultation for Sandsaver Pilot
3. Long-Term Alternatives for Coastal Highway Protection

IMMEDIATE SHORT-TERM PROJECTS

1. Kanenelu Beach (recently completed construction)
2. Hauʻula (in construction)
3. Kalaeʻōʻio Beach (in design)

SHORT-TERM FIX: KANENELU BEACH

SHORT-TERM FIX: HAUʻULA

SHORT-TERM FIX: KALAEʻŌʻIO BEACH

COASTAL HIGHWAY PROTECTION MID-TERM ALTERNATIVES

- **Maintenance of Existing Improvements**
- **Sand Replenishment with Groins**
- **Construction of Stabilization Structures**
    - **Rock Revetment**
    - **Seawall**
    - **Hybrid Seawall with Armored Sloped Apron**

MID-TERM PROJECT

KUALOA, KAʻAʻAWA, PUNALUʻU, AND HAUʻULA (KKPH) SHORELINE EROSION MITIGATION

KKPH –PURPOSE & NEED

- **Top ranked sites in the Statewide Coastal Highway Program Report**
  - https://hidot.hawaii.gov/highways/files/2019/09/State-of-Hawaii-Statewide-Coastal-Highway-Program-Report_Final_2019.pdf
- **Wave Action is affecting the Highway Embankment in 9 Identified areas along Kamehameha Highway**
- **Maintain the Useability of the Highway for the Near to Mid-Term (25-years)**
- **Implement Mid-Term Solution within the Next 3 to 5-Years**

KKPH – STATUS

- **Beginning of Design**
- **Topographic survey**
- **Preparing EA**

KKPH
SOLICIT PRE-ASSESSMENT COMMENTS

Anticipated Draft Environmental Assessment (EA) – Late 2023

Comment Period –

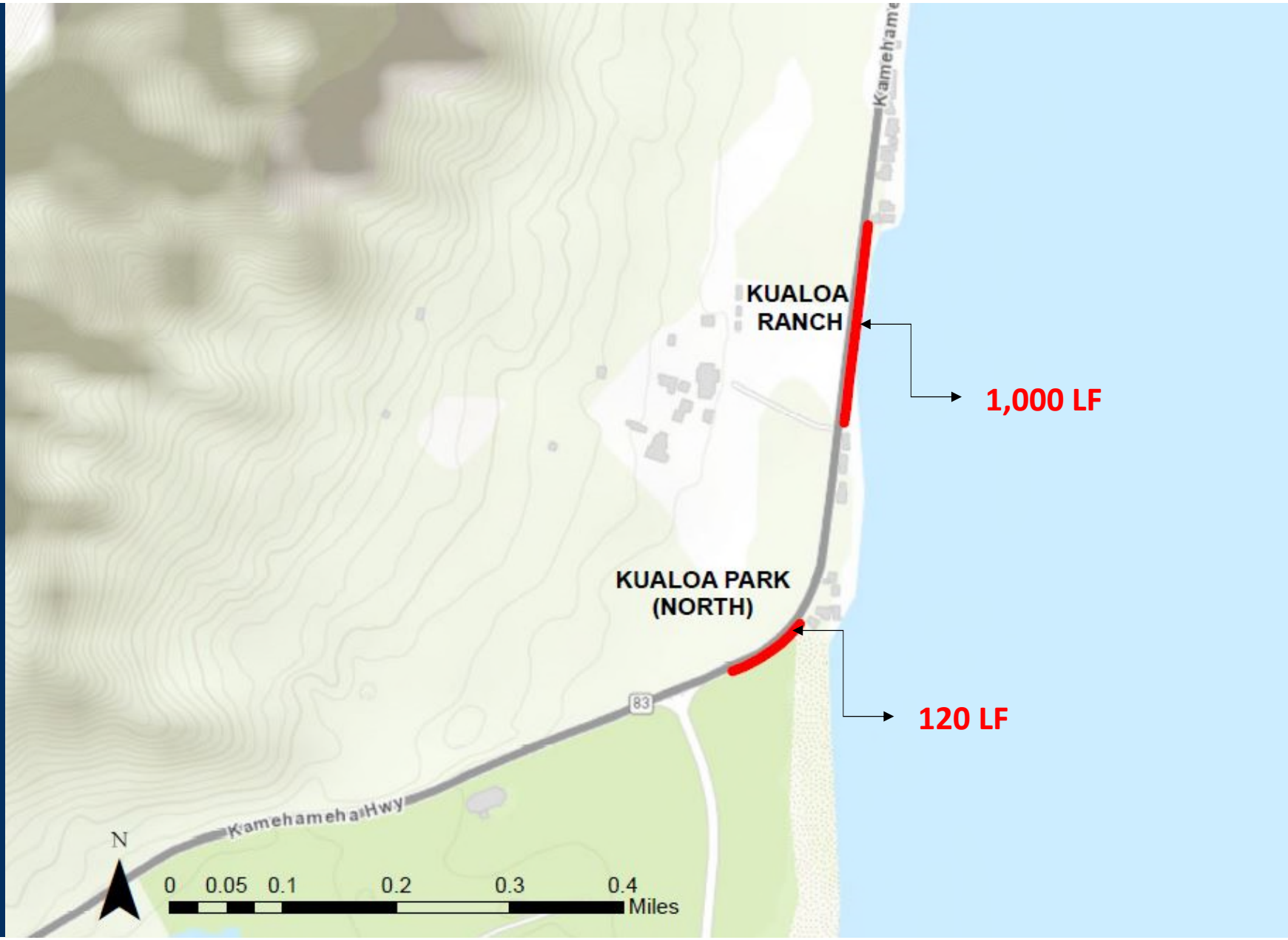
Now to June 11, 2023

Hardcopy or online survey

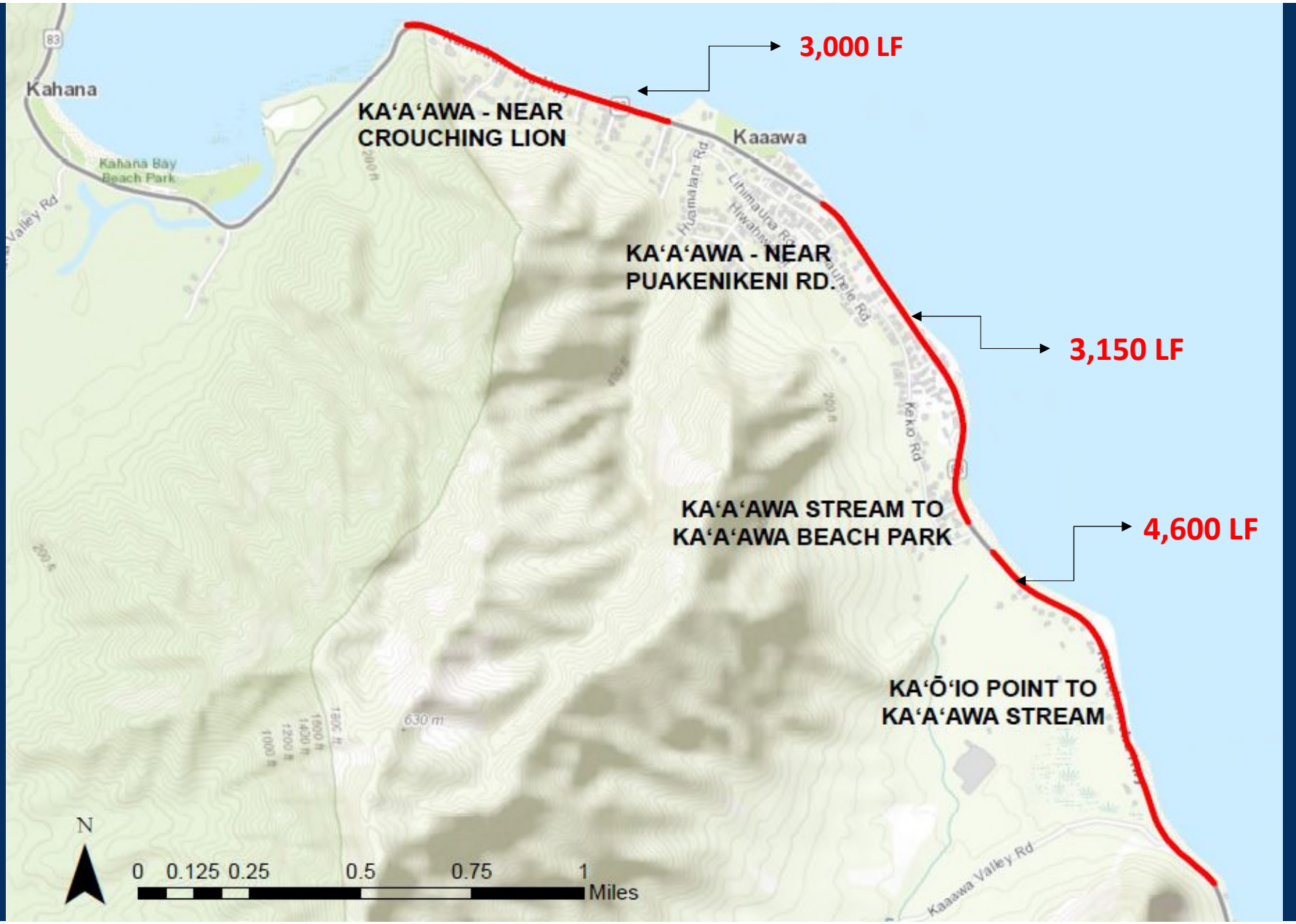
PROJECT SITES

Project Site	Approximate Length (feet)
Kualoa Park	120
Kualoa Ranch	1,000
Kaoio Point to Kaʻaʻawa Stream	4,600
Kaʻaʻawa Stream to Kaʻaʻawa Beach Park	1,450
Kaʻaʻawa in the Vicinity of Puakenikeni Road	1,700
Kaʻaʻawa in the Vicinity of Crouching Lion	3,000
Punaluʻu South	600
Punaluʻu North	400
Hauʻula	2,500
TOTAL	**15,370**

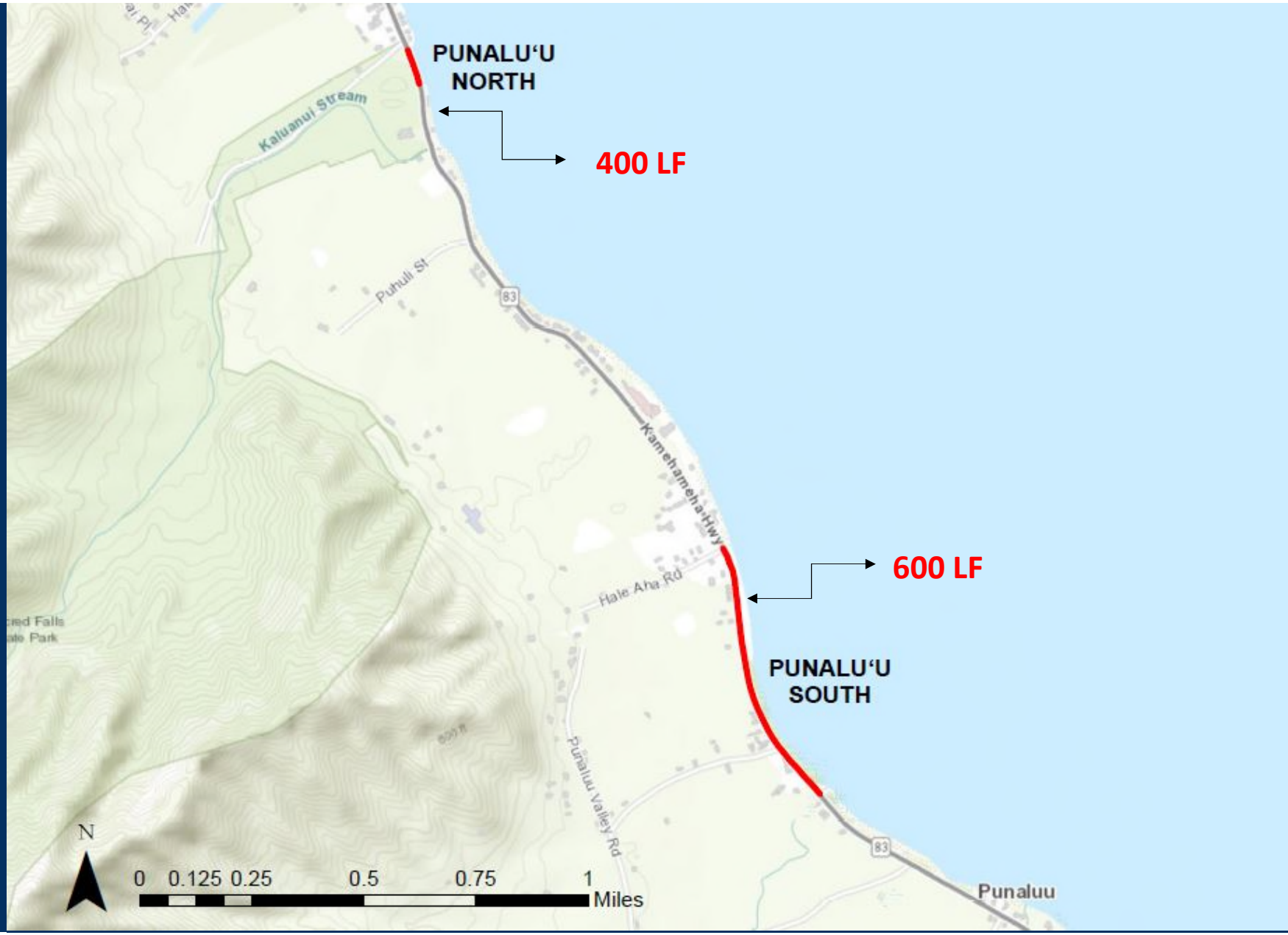
KUALOA PROJECT SITES



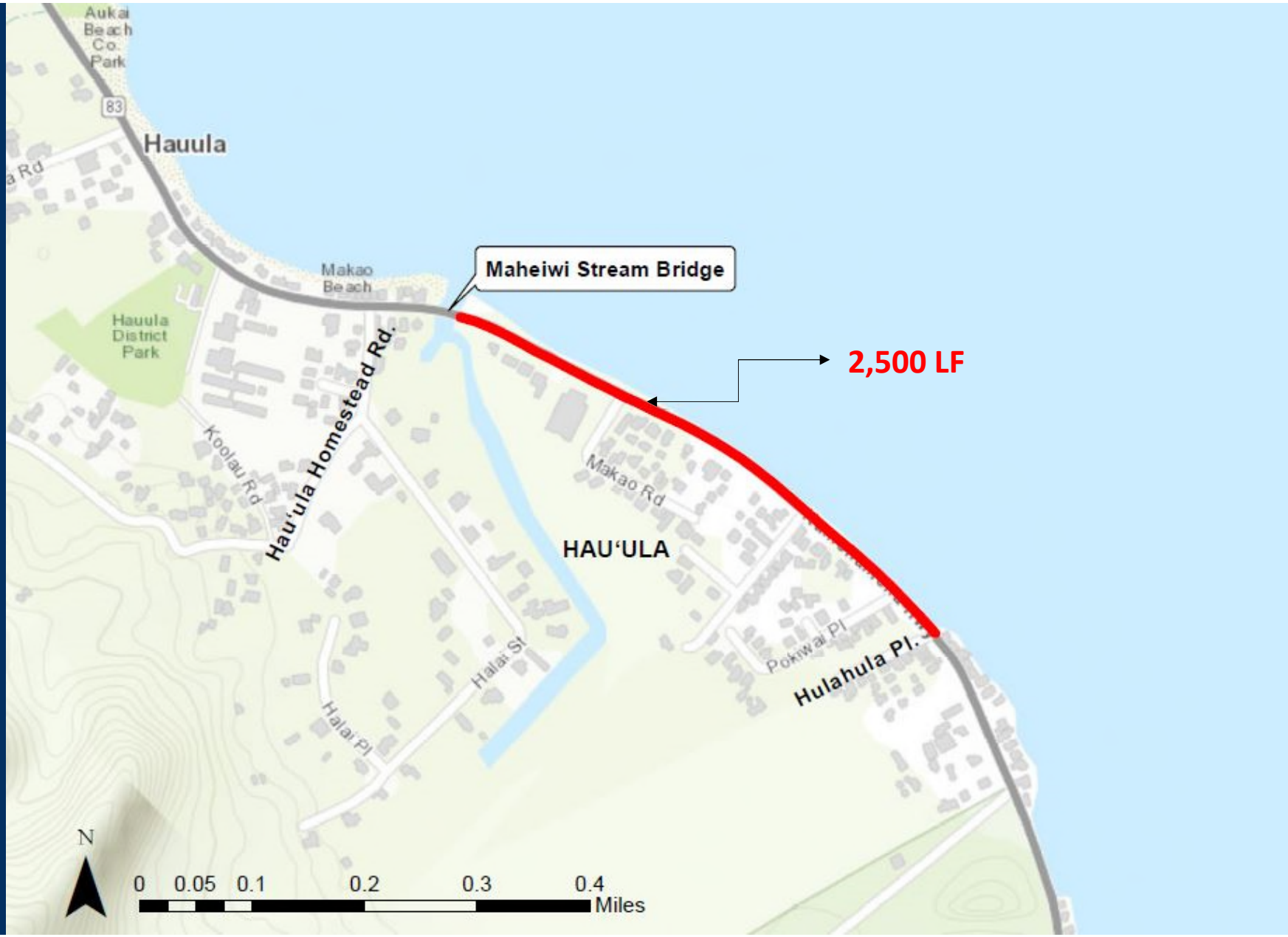
KA'A'AWA PROJECT SITES



PUNALU'U PROJECT SITES



HAU'ULA PROJECT SITE



ALTERNATIVES CURRENTLY CONSIDERED

Sand Replenishment with Groins

Placement of Sand Makai of the Highway

PROS

- Absorb and Dissipate Wave Energy
- Recover beaches

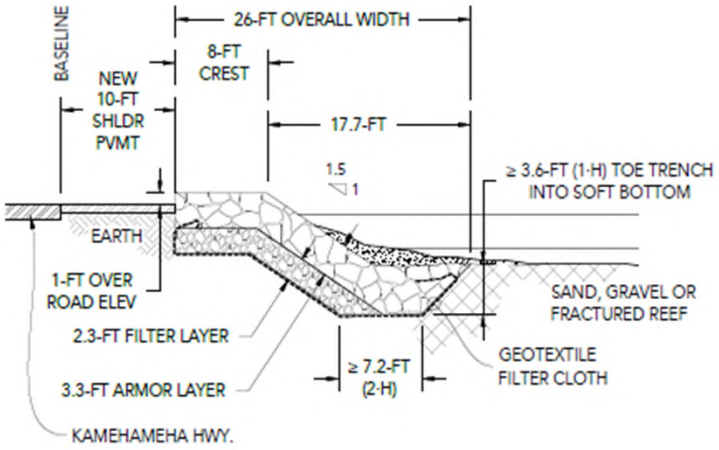
CONS

- Difficult and Costly to Locate and Import Sand from Offshore
- Terrestrial Sand Sources Not Available
- Not Applicable at All Locations
- Additional Permitting Requirements

ALTERNATIVES CURRENTLY CONSIDERED

Rock Revetment

Sloped Un-Cemented Mound of Rock or Concrete



PROS

- Porous Irregular Surface - Absorbs and Dissipates Wave Energy
- Durable and Resistant to Wave Damage
- Better Wave Energy Dissipation than Seawall and Less Reflective
- Increases Resilience to Coastal Hazards and Sea Level Rise
- Possibility to Reuse Existing Rocks

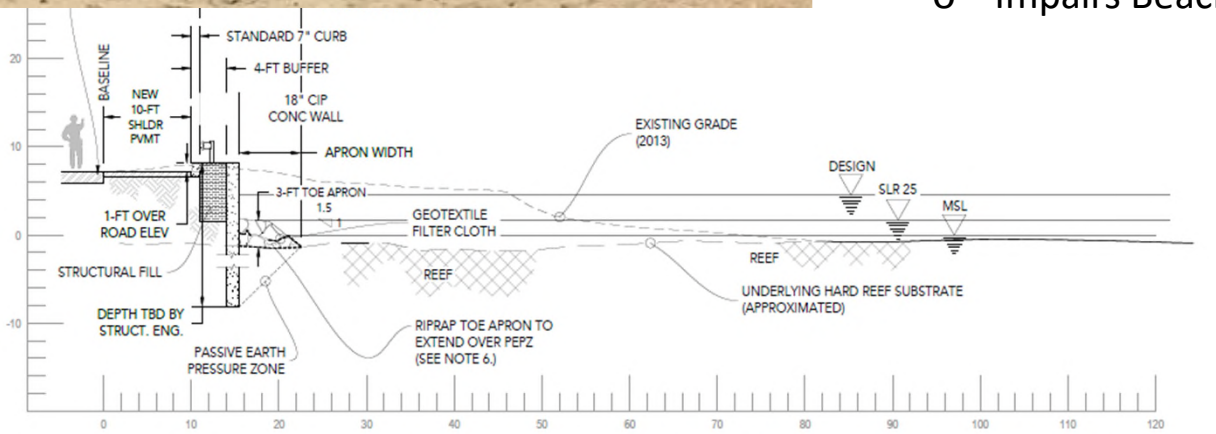
CONS

- Beach Encroachment

Appropriate Solution for All Project Sites

ALTERNATIVES CURRENTLY CONSIDERED

Seawall



PROS

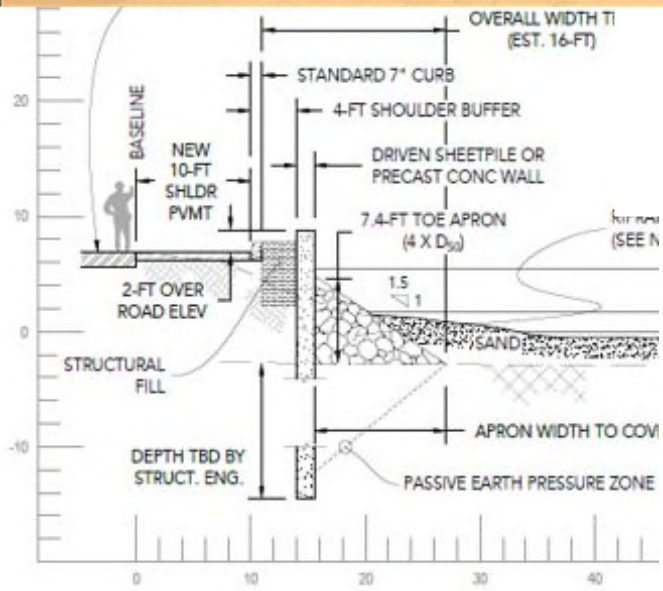
- Small Footprint
- Adaptable for Increased Waves and Sea Level Rise

CONS

- Highly Reflective of Wave Energy
- May Increase Existing Erosion / Beach Loss
- Impairs Beach Access

ALTERNATIVES CURRENTLY CONSIDERED

Hybrid Seawall with Armor Stone Apron



PROS

- Small Footprint of Wall with Wave Absorption Similar to a Revetment
- Adaptable for Sea Level Rise

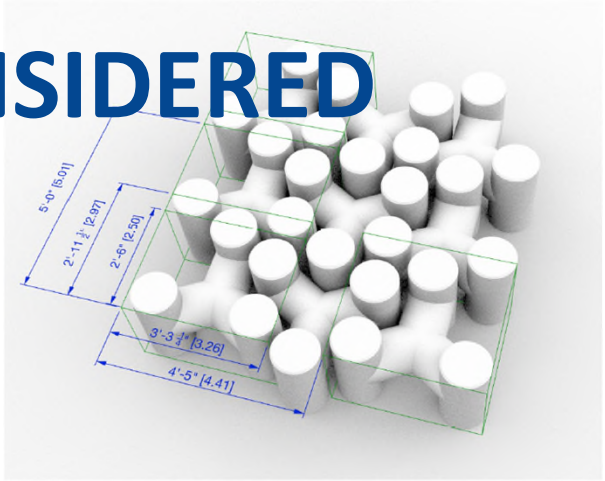
Limitations

- Not Appropriate for Higher Wave Energy Sites
- Not Appropriate for High Vertical Spans

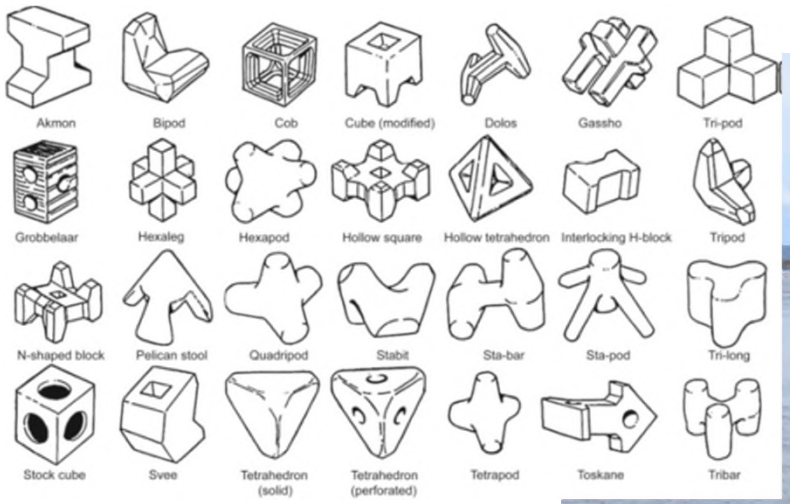
Appropriate Solution at Project Sites with Lowest Elevation and Smallest Wave Heights

Traditional Seawall Not Recommended

ALTERNATIVES CURRENTLY CONSIDERED
(WHEN STONE OF SUFFICIENT SIZE IS NOT AVAILABLE)



Concrete Armor Units



Samoa Highway

ALTERNATIVE SELECTION

ALTERNATIVE	Reliable Highway Protection for 25-years	Implementable in 3 to 5-years	Does Not Require Marine/Offshore Construction	Does Not Require Replacement of Material	Provides Beach Areas for Recreation	Wave Energy Absorption	Reliable Shore Protection Minimal Footprint
Beach Nourishment with Groins					✓	✓	
Rock Revetment	✓	✓	✓	✓		✓	✓
Seawall	✓	✓	✓	✓			✓
Hybrid Seawall with Armor Stone Apron	✓	✓	✓	✓		✓	✓

KKPH PREFERRED ALTERNATIVES

Project Site	Preferred Alternative	Approx. Length (feet)
Kualoa Park	Hybrid Seawall with Stone Apron- Length	120
Kualoa Ranch	Hybrid Seawall with Stone Apron -	1,000
Kaoio Point to Kaʻaʻawa Stream	Rock Revetment	4,600
Kaʻaʻawa Stream to Kaʻaʻawa Beach Park	Rock Revetment	1,450
Kaʻaʻawa in the Vicinity of Puakenikeni Road	Rock Revetment	1,700
Kaʻaʻawa in the Vicinity of Crouching Lion	Rock Revetment (North End)	3,000
	Hybrid Seawall with Stone Apron (South End)	
Punaluʻu South	Rock Revetment	600
Punaluʻu North	Rock Revetment	400
Hauʻula	Rock Revetment	2,500

KKPH DRAFT ENVIRONMENTAL ASSESSMENT

- Draft Environmental Assessment in Progress
- Coordination of Public Input May - August
- Publish Draft EA late 2023/early 2024
- Construction Schedule Dependent on:
  - Environmental Assessment
  - Selected Alternative(s)
  - Permits & Approvals

KKPH – TIMELINE & COST

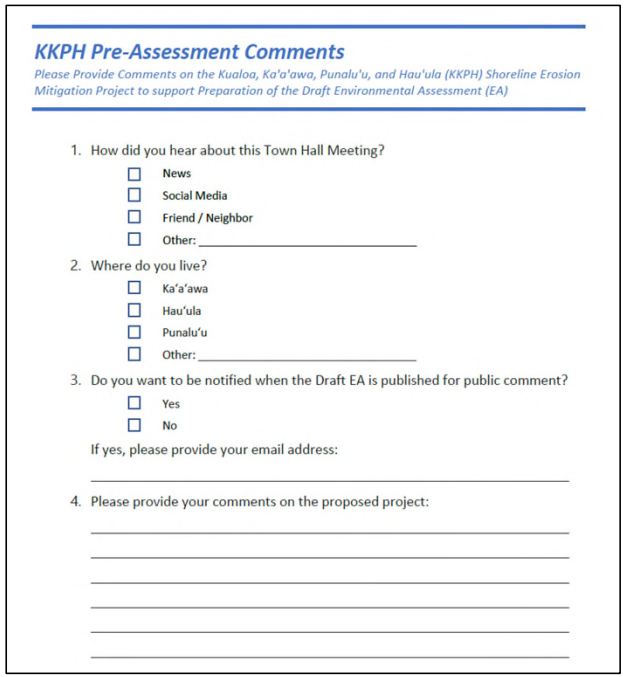
Draft EA	Late 2023
Final EA-FONSI	Summer 2024
Environmental Permits & Federal Environmental Clearance	Fall 2025
Final Construction Plans	Spring 2026
Advertisement	Summer 2026
Phase Construction Duration • To minimize traffic disruption to the public	Fall 2026 - 2029
Preliminary Cost Estimate for Revetments	$120M

KKPH PRE-ASSESSMENT COMMENT

Please Provide Comments on the KKPH Shoreline Erosion Mitigation Project to support Preparation of the Draft Environmental Assessment (EA)

Submit Comments Online at:
https://forms.office.com/r/9yuMbHEBhC

Paper Forms



KKPH Pre-Assessment Comments

Please Provide Comments on the Kualoa, Ka'a'awa, Punalu'u, and Hau'ula (KKPH) Shoreline Erosion Mitigation Project to support Preparation of the Draft Environmental Assessment (EA)

1. How did you hear about this Town Hall Meeting?
   - ☐ News
   - ☐ Social Media
   - ☐ Friend / Neighbor
   - ☐ Other: _____
2. Where do you live?
   - ☐ Ka'a'awa
   - ☐ Hau'ula
   - ☐ Punalu'u
   - ☐ Other: _____
3. Do you want to be notified when the Draft EA is published for public comment?
   - ☐ Yes
   - ☐ No

   If yes, please provide your email address:

   _____
4. Please provide your comments on the proposed project:

   _____
   _____
   _____
   _____
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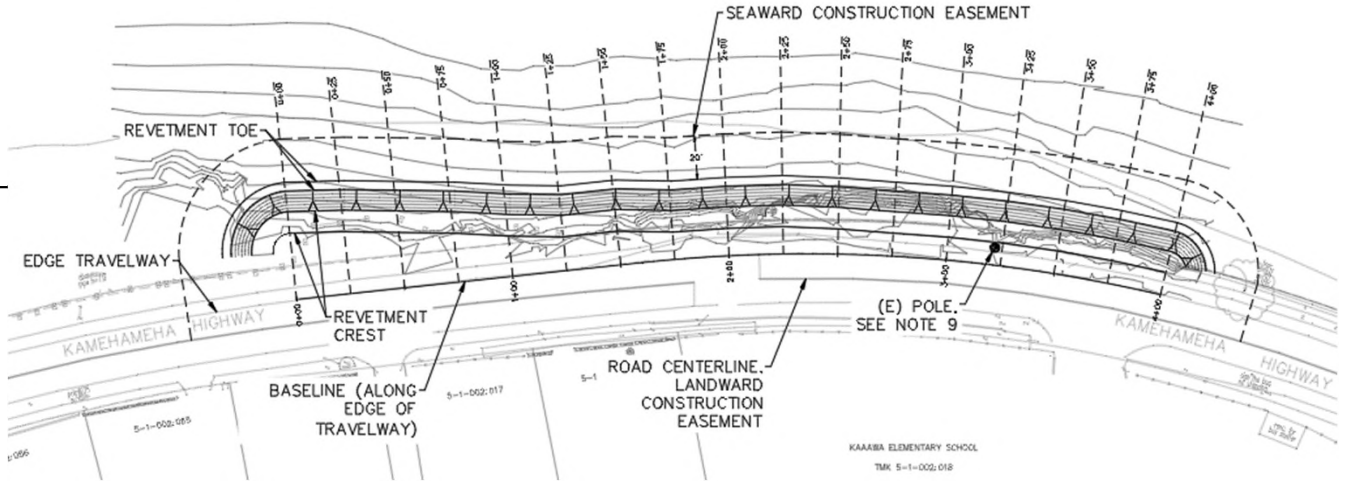
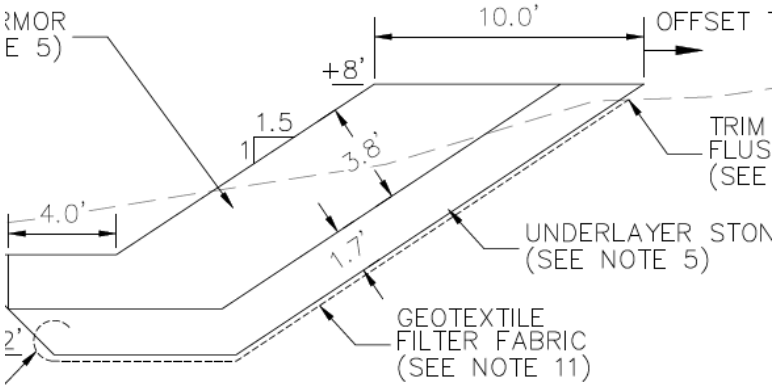
Comments Accepted Through June 11, 2023





MID-TERM FIX: KA‘A‘AWA ELEMENTARY

KA‘A‘AWA ELEMENTARY

- Scope of work:
  - To install approximately 500 LF of engineered rock revetment (25 years design life)
  - Alternative Considered:

- Status:
  - Roughly 50% design
  - Final EA-FONSI (Published June 16, 2022)
  - Pending some Environmental Clearances

- Estimated Ready to Advertise: Winter 2023
- Estimated Cost: $2.5M

KA‘A‘AWA ELEMENTARY
NHPA SECTION 106 CONSULTATION

- **Requires Federal Agencies to Consider the Effects of their Actions on Historic Properties**
- **We Invite you to be a Consulting Party in the Section 106 Consultation**
- **Help us Identify:**
  - Historic and Cultural Sites
  - Persons or Organization Knowledgeable about the Project Area
  - Descendants with Ancestral, Lineal or Cultural Ties to or Cultural Knowledge or Concerns for, and Cultural or Religious Attachment to the Project Area

KA‘A‘AWA ELEMENTARY

NHPA SECTION 106 CONSULTATION

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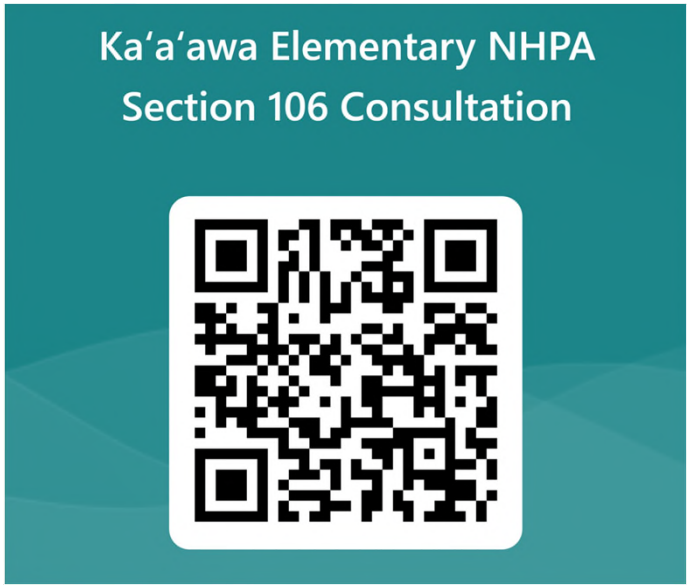
Online @:
https://forms.office.com/r/sdVhqwa2Hk

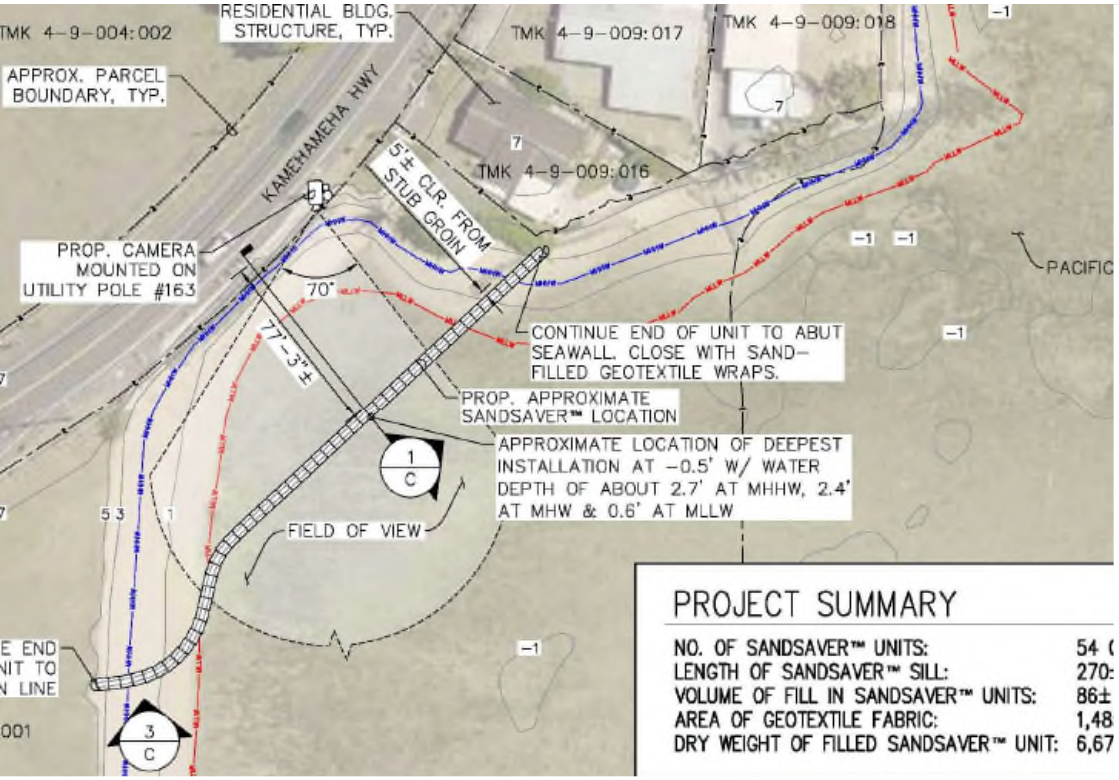


Comments Accepted Through June 11, 2023

NON- DREDGING SAND REPLENISHMENT PILOT

- SandSavers – Sand Replenishment Pilot Project at Kualoa & Waimanalo

- Future HDOT/ DLNR Partnership – Dry Stack Wall



NON-DREDGING SAND REPLENISHMENT PILOT – SANDSAVER AT KUALOA & WAIMANALO

SANDSAVER TECHNOLOGY

SandSaver works to protect roadway

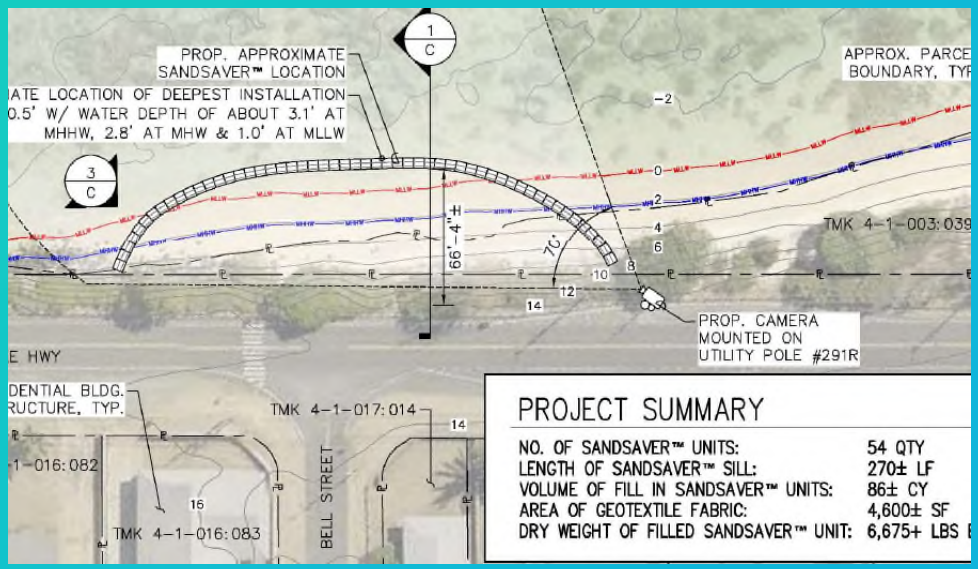
- Reduces wave energy reaching the shoreline
- Trap and retain beach sand along the shoreline
- Stabilizes the eroding embankment to provide protection to the highway

Also enhances the environmental, cultural, and recreational use of the public beach.

The pilot project will monitor and measure the effects on coastal erosion.

HOW SANDSAVER WORKS

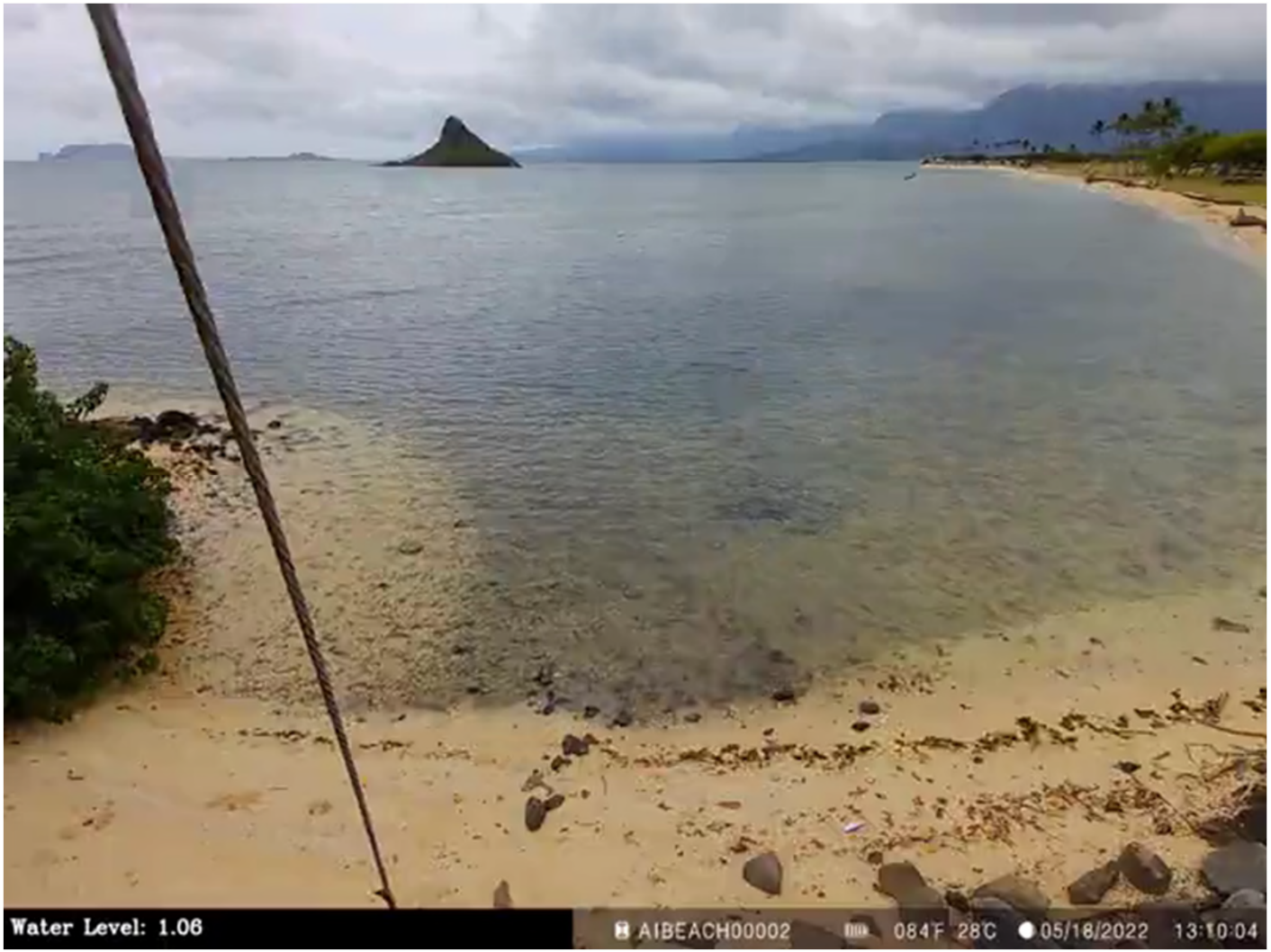
- Holes in the makai face of the units are larger than the openings on the mauka side
- As waves crash against the front of the structure, water with suspended sand grains accelerates through the tapered openings to the beach side of the structure
- Sand is allowed time to settle into the beach.



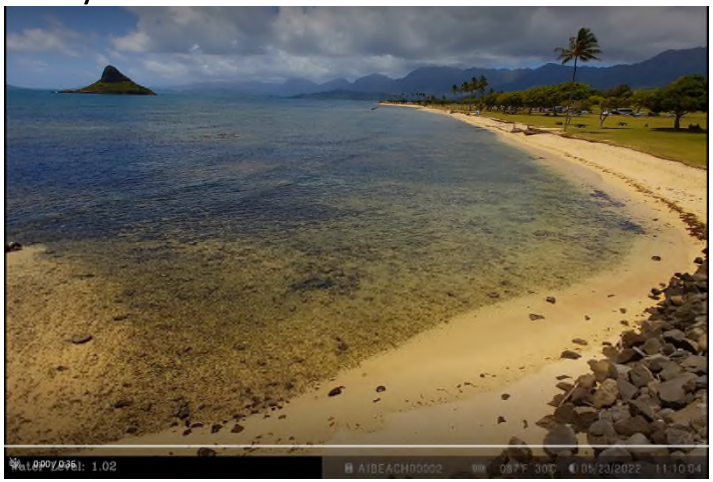
KUALOA & WAIMANALO

- Approximately 270 feet long (each)
- 54 units placed end-to-end, forming a pond-like structure seaward from the shoreline.
- Each unit is a hollow plastic (polyethylene) container, measuring about 5 feet long by maximum 5 feet wide by 3 feet tall,
- Adjacent units will be connected to each other by wire rope.

SHORELINE MONITORING



May 2022



May 2023

SANDSAVER PILOT (KUALOA & WAIMANALO) STATUS

- **Design: 60%**
- **Environmental Permitting and Clearance : Winter 2023**
- **Estimate Construction: Summer 2024**
- **Cost: $1.5M**

SANDSAVER PILOT (KUALOA & WAIMANALO)
NHPA SECTION 106 CONSULTATION

- **Requires Federal Agencies to Consider the Effects of their Actions on Historic Properties**
- **We Invite you to be a Consulting Party in the Section 106 Consultation**
- **Help us Identify:**
  - Historic and Cultural Sites
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SANDSAVER (KUALOA & WAIMANALO)
NHPA SECTION 106 CONSULTATION

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Please submit your Comments Online at:
http://www.pcsihawaii.com/kualoa106

Comments Accepted Through June 11, 2023

FUTURE HDOT/DLNR PARTNERSHIP:

TRADITIONAL DRY STACK WALL

TRADITIONAL DRY STACK WALL

- Sidewalls were made high enough to accrete sand, yet not too high to cause a reflection of the longshore current
- Front wall is high enough to keep the outward current from taking out the sand, yet not too tall to cause reflection of the incoming wave
- Within a fringing reef that has longshore sediment transport from both sides and outward current channel area
- Location: TBD

Projected Sea Level Rise

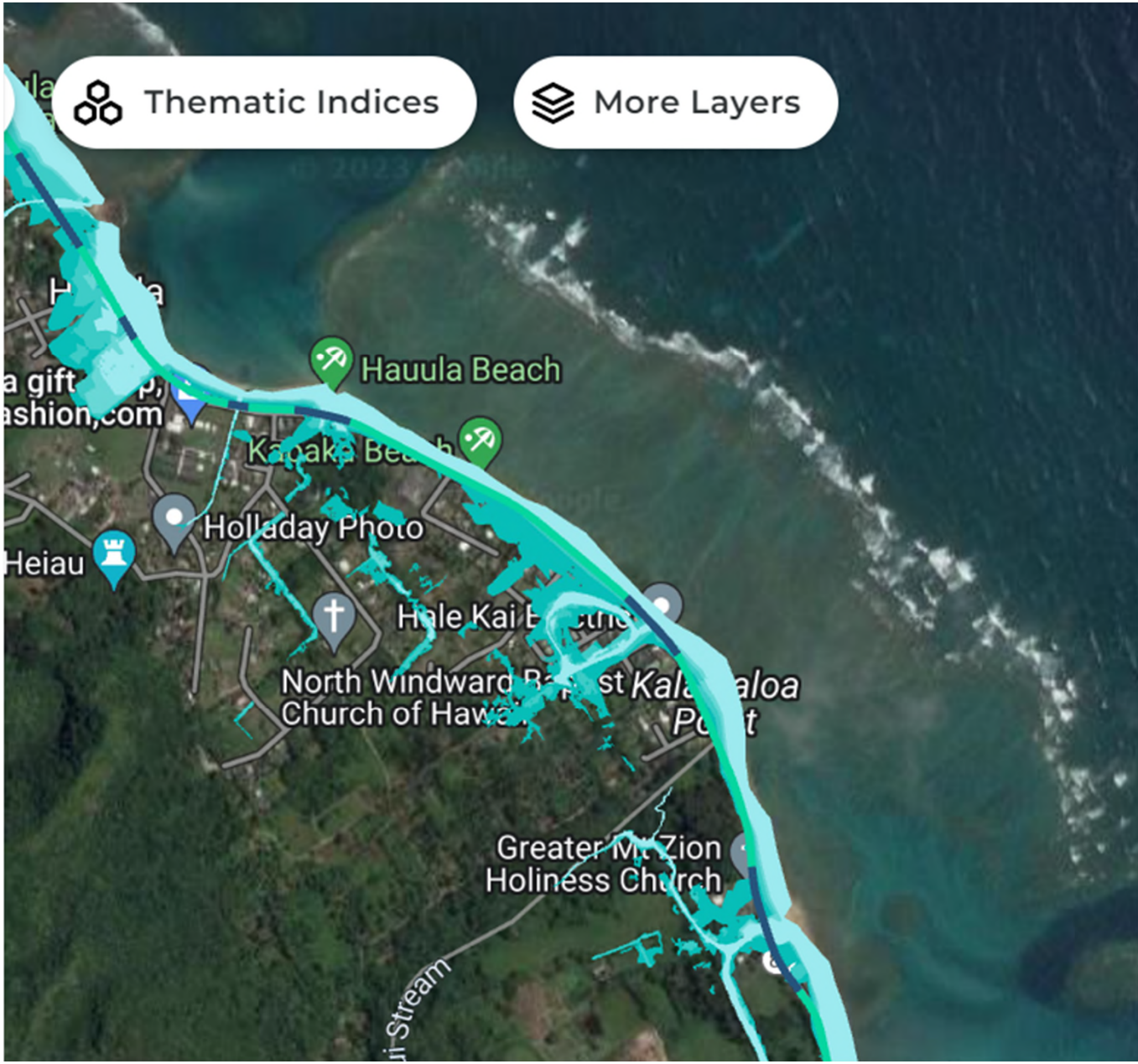
Sea Level Rise Scenario

Year 2100

0.5 FT

3.2 FT

https://climate-resilience.hidot.hawaii.gov/map/insights/sea



COASTAL HIGHWAY PROTECTION LONG-TERM ALTERNATIVES

- Manage retreat - Relocate Highway Inland
- Elevated Structure

https://ormp.hawaii.gov/ (Ocean Resources Management Plan)

dbedt.op.czm@hawaii.gov

MAHALO

http://hidot.hawaii.gov/presentations